

<b>AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT</b>				1. Contract ID Code Cost-Plus-Fixed-Fee		Page 1 Of 8	
2. Amendment/Modification No.  P00004		3. Effective Date  2004SEP22		4. Requisition/Purchase Req No.  SEE SCHEDULE		5. Project No. (If applicable)	
6. Issued By TACOM WARREN AMSTA-AQ-ABGA KATHY LAMBERT (586)574-7634 WARREN, MICHIGAN 48397-5000 HTTP://CONTRACTING.TACOM.ARMY.MIL EMAIL: LAMBERTK@TACOM.ARMY.MIL		Code W56HZV		7. Administered By (If other than Item 6) DCMA DETROIT U.S. ARMY TANK & AUTOMOTIVE COMMAND (TACOM) ATTN: DCMAE-GJD WARREN, MI 48397-5000		Code S2305A	
				SCD C PAS NONE ADP PT HQ0337			
8. Name And Address Of Contractor (No., Street, City, County, State and Zip Code)  AMERICAN SYSTEMS TECHNOLOGY INC 888 WEST BIG BEAVER STE 420 TROY, MI. 48084-4743  TYPE BUSINESS: Small Disadvantaged Business Performing in U.S.				<input type="checkbox"/>		9A. Amendment Of Solicitation No.	
				<input type="checkbox"/>		9B. Dated (See Item 11)	
				<input checked="" type="checkbox"/>		10A. Modification Of Contract/Order No. DAAE07-02-C-L075	
				<input type="checkbox"/>		10B. Dated (See Item 13) 2002SEP18	
Code 1H1C2		Facility Code					
<b>11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS</b>							
<input type="checkbox"/> The above numbered solicitation is amended as set forth in item 14. The hour and date specified for receipt of Offers <input type="checkbox"/> is extended, <input type="checkbox"/> is not extended. Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods: (a) By completing items 8 and 15, and returning _____ copies of the amendments: (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. <b>FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER.</b> If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.							
12. Accounting And Appropriation Data (If required) ACRN: AC NET INCREASE: \$111,910.00							
<b>13. THIS ITEM ONLY APPLIES TO MODIFICATIONS OF CONTRACTS/ORDERS</b>							
KIND MOD CODE: G It Modifies The Contract/Order No. As Described In Item 14.							
<input type="checkbox"/> A. This Change Order is Issued Pursuant To: The Changes Set Forth In Item 14 Are Made In The Contract/Order No. In Item 10A.							
<input type="checkbox"/> B. The Above Numbered Contract/Order Is Modified To Reflect The Administrative Changes (such as changes in paying office, appropriation data, etc.) Set Forth In Item 14, Pursuant To The Authority of FAR 43.103(b).							
<input checked="" type="checkbox"/> C. This Supplemental Agreement Is Entered Into Pursuant To Authority Of: Changes - Cost Reimb., 52.243-2							
<input type="checkbox"/> D. Other (Specify type of modification and authority)							
<b>E. IMPORTANT:</b> Contractor <input type="checkbox"/> is not, <input checked="" type="checkbox"/> is required to sign this document and return _____ copies to the Issuing Office.							
14. Description Of Amendment/Modification (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)  SEE SECOND PAGE FOR DESCRIPTION							
15A. Name And Title Of Signer (Type or print)				16A. Name And Title Of Contracting Officer (Type or print) DEREK MCALEER MCALEERD@TACOM.ARMY.MIL (586)574-7197			
15B. Contractor/Offeror  (Signature of person authorized to sign)		15C. Date Signed		16B. United States Of America  By _____ /SIGNED/ (Signature of Contracting Officer)		16C. Date Signed  2004SEP22	
NSN 7540-01-152-8070 PREVIOUS EDITIONS UNUSABLE				30-105-02		STANDARD FORM 30 (REV. 10-83) Prescribed by GSA FAR (48 CFR) 53.243	

Except as provided herein, all terms and conditions of the document referenced in item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

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SECTION A - SUPPLEMENTAL INFORMATION

1. The purpose of this bilateral Modification P00004 is to incorporate changed effort into the contract pursuant to the Changes Clause - Cost Reimbursement (ALT V, dated April 1984), Aug 1987 and provide funding for this changed effort.
2. As a result of this Modification, the contract is changed as follows:
  - a. SECTION B -
    - (1) CLIN 0003 is changed to revise the Estimated Costs, Fixed Fee and Total Estimated Costs for the CLIN 0003 effort, and
    - (2) SubCLIN 0003AB is changed to reflect the addition of \$111,910 in funds for the changed effort.
  - b. SECTION C -
    - (1) The first sentence of paragraph C.3.10 is changed from "The contractor shall prepare and assemble an installation package (instructions, illustrations, interfacing hardware) for each host vehicle (MTV, M915, HEMTT and HMMWV." to "The contractor shall prepare and assemble an installation package (instructions, illustrations, interfacing hardware) for each host vehicle (MTV, M915/M916, and HMMWV)."
    - (2) Paragraph C.3.12 is changed from "The contractor shall upon completion of TARDEC's prototype evaluation and approval by the COR, fabricate and assemble a minimum of eight prototype sensor systems and installation packages (two sensor packages for each host vehicle) (MTV, M9125, HEMMTT, and HMMWV.)" to "The contractor shall upon completion of TARDEC's prototype evaluation and approval by the COR, fabricate and assemble a minimum of eight prototype sensor systems and installation packages (four for M915/M916, two for MTV and two for HMMWV), within 30 calendar days of execution of Modification P00004."
    - (3) Paragraph C.6.1 is changed from "The contractor shall prepare a Final Scientific and Technical Report ..." to "The contractor shall prepare an interim Scientific and Technical Report containing the completed functional requirements specification (reference paragraph C.3.7) within 60 days of execution of Modification P00004 and a Final Scientific and Technical Report...."
    - (4) The previous paragraph C.3.16 which stated that "the period of performance for CLIN 0003 is 19 June 2003 to 30 September 2004." is deleted as the period of performance is stated in paragraph F.2 of the contract.
    - (5) A new paragraph C.3.16 and C.3.17 is incorporated as follows:
 

C.3.16 Design, fabricate, deliver to TARDEC, and demonstrate an advanced oil sensing test station for the testing of oil sensor systems in accordance with the functional requirements specification prepared jointly with TARDEC in accordance with paragraph C.3.7. There shall be a minimum of two design reviews conducted with TARDEC with delivery by 30 June 2005.

C.3.17 Conduct engineering analysis, procurement, and installation of an estimated three future sensor systems mutually agreed upon by the contractor and TARDEC for incorporation into the hardware/software architecture developed under task C.3.1.
    - (6) The first sentence of Paragraph C.5.2.1 is changed from "The contractor shall anticipate five (5) trips for two (2) engineers to support this effort. The anticipated travel is as follows: three (3) trips to the PM TMDE (Huntsville, AL) and two (2) trips to the Northwest U.S. (Tacoma, WA) or where TARDEC designated host vehicles reside." to "It is estimated that nine (9) trips for two (2) engineers will be required to support this effort. The anticipated travel is as follows: three (3) trips to PM TMDE (Huntsville, AL), three (3) trips to the northwest U.S. (Tacoma, WA), and three (3) trips to the east coast U.S. (Baltimore, MD), or where TARDEC-designated host vehicles then reside."
  - c. Section F - Paragraph F.2. is changed from "The period of performance for CLIN 0003 is 19 Jun 03 to 30 Sep 04." to "The period of performance for CLIN 0003 is 10 Jun 03 to 30 Sep 05." Paragraph F.3 is changed from "The total contract period of performance is 18 Sep 02 to 30 Sep 04." to "The total contract period of performance is 18 Sep 02 to 30 Sep 05."
  - d. SECTION G - Applicable Accounting and Appropriate data is incorporated into the contract.
3. As a result of this Modification P00004, the total amount of the contract is increased by \$111,910 from \$599,516 to \$711,426.
4. The Contractor agrees that this is a complete and final equitable adjustment for Modification P00004, and the Contractor releases the government from any liability under this Contract for any further equitable adjustments attributable to the facts or circumstances giving rise to Modification P00004. All other terms and conditions of the contract remain unchanged and in full force and effect.

Name of Offeror or Contractor: AMERICAN SYSTEMS TECHNOLOGY INC

ITEM NO	SUPPLIES/SERVICES	QUANTITY	UNIT	UNIT PRICE	AMOUNT									
0003	<p>SECTION B - SUPPLIES OR SERVICES AND PRICES/COSTS</p> <p><u>SERVICES LINE ITEM</u></p> <p>SECURITY CLASS: Unclassified</p> <p>Contractor shall furnish all the supplies and services to accomplish the tasks specified in Section C, Scope of Work.</p> <p>Est. Cost:           \$606,401.50</p> <p>Fixed Fee:           \$ 35,549.50</p> <p>Total Cost:         \$641,951.00</p> <p>(End of narrative B001)</p>													
0003AB	<p><u>SERVICES LINE ITEM</u></p> <p>NOUN: ASTI FY04 INCREMENT 02CL075</p> <p>PRON: R342C227R3       PRON AMD: 02       ACRN: AC</p> <p>AMS CD: 622601H9111</p> <p><u>Inspection and Acceptance</u></p> <p>INSPECTION: Destination       ACCEPTANCE: Destination</p> <p><u>Deliveries or Performance</u></p> <table><tr><td>DLVR SCH</td><td></td><td>PERF COMPL</td></tr><tr><td><u>REL CD</u></td><td><u>QUANTITY</u></td><td><u>DATE</u></td></tr><tr><td>001</td><td>0</td><td>30-SEP-2005</td></tr></table> <p>\$           341,951.00</p>	DLVR SCH		PERF COMPL	<u>REL CD</u>	<u>QUANTITY</u>	<u>DATE</u>	001	0	30-SEP-2005				\$ 341,951.00
DLVR SCH		PERF COMPL												
<u>REL CD</u>	<u>QUANTITY</u>	<u>DATE</u>												
001	0	30-SEP-2005												

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SECTION C - DESCRIPTION/SPECIFICATIONS/WORK STATEMENT

SCOPE OF WORK

C.1 INTRODUCTION: The Petroleum and Water Quality Technology Team within the Tank-Automotive Research and Development Center (TARDEC) is conducting efforts related to a Science and Technology Objective (STO), for Petroleum, Oil and Lubricant Quality Analyzer and Sensors. This STO is focused on investigating new technologies to improve the current Army Oil Analysis Program (AOAP), particularly by reducing the maintenance burden of oil sampling and offsite lab analysis. The goal is to establish the feasibility of onboard oil condition monitoring sensors to accurately predict the remaining useful life of lubricants and to reliably detect the presence of contaminants that would signal the need to plan equipment service or maintenance.

C.2 OBJECTIVE: The contractor as an independent contractor not as an agent of the Government and within schedules and constraints of the contract shall provide research and analytical support to develop a flexible diagnostic and prognostic framework and functional requirements for an on-board oil condition monitoring sensor system. This effort shall include research and analysis leading toward prototype fabrication for use in field-testing of the sensor system. Tasks associated with these objectives are:

C.3 TASKS:

- C.3.1 Develop a flexible hardware/software architecture for the sensor data acquisition/analysis system. Define all essential functional requirements. The architecture should allow for varying the number and type of sensors and allow easy updating of sensor data analytical software.
- C.3.2 Identify and analyze input/output interfaces from oil condition monitoring sensors and other sensor technology and associated measurement techniques. The Government (TARDEC) is currently testing these sensors. The Government will provide the contractor with a complete technical description of the sensors as GFI after contract award.
- C.3.3 Identify and analyze signal transmission, conditioning and integration of both hardware and software with the sensors and the host vehicle. Ensure compatibility with standards and policies established under the Army Diagnostic Improvement Program (ADIP).
- C.3.4 Develop supporting algorithms and models for sensor data collection, analysis, storage and retrieval.
- C.3.5 Identify and analyze operating environmental requirements and human-system interfaces (for both operator and maintainer).
- C.3.6 Develop cost effectiveness models and estimates for prototype fabrication and projected production unit cost. Identify and document assumptions used in cost estimates.
- C.3.7 Document the results of the research and analytical work performed in a technical report. The technical report shall include a fully described functional requirements specification and an implementation plan for the diagnostics/prognostics test platform.

PHASE II - TECHNOLOGY DEVELOPMENT & DEMONSTRATION (CLIN 0003)

- C.3.8. The contractor shall conduct engineering analysis of available sensor technologies and recommend best technical approach (to include estimated prototyping and production costs) to meet the performance requirements defined during Phase I. Baseline system capabilities must equal or exceed the performance of CSI dielectric and Cambridge Technologies viscosity sensors tested by TARDEC.
- C.3.9. The contractor shall develop, refine and assemble selected sensor technologies into an integrated, ruggedized, compact package suitably designed to withstand the operational environment expected during a one-year field demonstration installed for the TARDEC defined host vehicles. Hardware and software design integration should consider maximizing interoperability with suitable handheld or notebook PC.
- C.3.10. The contractor shall prepare and assemble an installation package (instructions, illustrations, interfacing hardware) for each host vehicle (MTV, M915/M916 and HMMWV). Design of installation package shall consider methods to minimize host vehicle modifications and installation cost.
- C.3.11. The contractor shall deliver prototype model for performance demonstration and performance evaluation at the TARDEC petroleum testing laboratory. The contractor shall provide eight (8) direct hours of technical assistance to TARDEC technicians and test engineers to install and instrument the prototype on the host vehicle.
- C.3.12. The contractor shall upon completion of TARDECs prototype evaluation and approval by the COR,

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fabricate and assemble a minimum of eight prototype sensor systems and installation packages (four for M915/M916, two for MTV and two for HMMWV) within 30 calendar days of execution of Modification P00004.

C.3.13. The contractor shall install sensor systems on the host vehicles as each vehicle becomes available and perform technical checks to insure proper operation and installation. Installation will require travel to customer vehicle location site.

C.3.14. The contractor shall provide telephonic and/or onsite technical support at vehicle location site(s) to troubleshoot and resolve prototype technical and operational hardware and software problems. Estimate 40 direct labor hours in the performance of this task. Resolution of technical problems shall be accomplished in a reasonably cost effective manner with the problem corrected with an objective of 48 hours or less. Onsite trips are anticipated during the demonstration period.

C.3.15. The contractor shall update requirements in the performance specification document to correct deficiencies and to improve the general performance and design characteristics of the oil condition monitoring system, based on lessons learned during technical testing and field demonstrations.

C.3.16 Design, fabricate, deliver to TARDEC, and demonstrate an advanced oil sensing test station for the testing of oil sensor systems in accordance with the functional requirements specification prepared jointly with TARDEC in accordance with paragraph C.3.7. There shall be a minimum of two design reviews conducted with TARDEC with delivery by 30 June 2005.

C.3.17 Conduct engineering analysis, procurement, and installation of an estimated three future sensor systems mutually agreed upon by the contractor and TARDEC for incorporation into the hardware/software architecture developed under task C.3.1.

C.4 START OF WORK MEETING: The contractor shall conduct a start of work meeting at TACOM, Warren MI no later than (NLT) 20 days after contract award. The intent of this meeting will be to ensure a common understanding of the contract objectives and to develop a milestone schedule of key events and deliverables. At the meeting, the contractor shall specifically identify any GFI needed in the performance of the work required and state when the information is required. The contractor shall coordinate with the Contracting Officers Technical Representative (COTR) to schedule a specific date and time for the Start of Work meeting.

C.5 TRAVEL REQUIREMENTS (CLIN 0001 and CLIN 0003):

C.5.1 CLIN 0001

C.5.1.2 Six local trips (which includes the Start of Work Meeting listed in paragraph C.4) to TACOM-Warren. Two, 2-day, trips to Huntsville, AL (PM TMDE).

C.5.2 CLIN 0003

C.5.2.1 It is estimated that nine (9) trips for two (2) engineers will be required to support this effort. The anticipated travel is as follows: three (3) trips to PM TMDE (Huntsville, AL), three trips to the northwest U.S. (Tacoma, WA) and three (3) trips to the east coast U.S. (Baltimore, MD), or wherever TARDEC-designated host vehicles then reside. All non-local travel must be pre-approved by the COR.

C.6 DELIVERABLES (CLIN 0001 and 0003):

C.6.1 CLIN 0001

C.6.1 The contractor shall prepare an interim Scientific and Technical Report containing the completed functional requirements specification (reference paragraph C.3.7) within 60 days of execution of Modification P00004 and a Final Scientific and Technical Report in accordance with DI-MISC-80711A and a Performance & Cost Report in accordance with DI-FNCL-80912 and the Contract Data Requirements List, DD Form 1423, Exhibit A, Data Items A001 and A002. All data deliverables shall be submitted electronically as indicated in the DD1423.

C.6.2 CLIN 0003

C.6.2.1 The contractor shall submit Performance & Cost Reports in accordance with DI-FNCL-80912 and the DD Form 1423, Exhibit B, Data Item A003.

C.6.2.2 The contractor shall submit a draft Scientific and Technical Report (DI-MISC-80711A), which is due 15 days prior to completion of Phase II. The final report shall be submitted one week upon completion of Phase II.

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C.6.2.3. The contracor shall deliver prototype oil condition monitoring system and installation package - A minimum quantity of eight shall be delivered to the state of Washington, no later than 15 Sep 03.

\*\*\* END OF NARRATIVE C 002 \*\*\*

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SECTION F - DELIVERIES OR PERFORMANCE

F.1      The period of performance for CLIN 0001 shall be nine (9) months after contract award.

F.1.2    The Draft Scientific and Technical Report shall be submitted under CLIN 0002 to the Government no later than (NLT) two hundred and forty-five (245) days after contract award for CLIN 0001. The Government will review the Draft Final Technical Report NLT fourteen (14) days after submission by the Contractor and notify the Contractor of any changes to be incorporated into the Draft Final Technical Report. The approved Draft Final Technical Report shall be delivered as a Final Technical Report, with any changes required by the Government in its review incorporated into the report NLT 9 months after award of contract.

F.2      The period of performance for CLIN 0003 is 19 Jun 03 to 30 Sep 05.

F.2.2    The Draft Scientific and Technical Report shall be submitted under CLIN 0002 to the Government no later than (NLT) fifteen (15) days prior to completion of CLIN 0003. The Government will review the Draft Final Technical Report NLT fourteen (14) days after submission by the Contractor and notify the Contractor of any changes to be incorporated into the Draft Final Technical Report. The approved Draft Final Technical Report shall be delivered as a Final Technical Report, with any changes required by the Government in its review incorporated into the report NLT 7 days after upon completion of CLIN 0003.

F.3      The total contract period of performance is 18 Sep 02 to 30 Sep 05.

\*\*\* END OF NARRATIVE F 001 \*\*\*

SECTION G - CONTRACT ADMINISTRATION DATA

LINE	PRON/ AMS CD/ <u>ITEM</u> <u>MIPR</u>		OBLG STAT/ <u>JOB ORD NO</u>		<u>PRIOR AMOUNT</u>		INCREASE/DECREASE <u>AMOUNT</u>		CUMULATIVE <u>AMOUNT</u>
0003AB	R342C227R3	AC	2	\$	230,041.00	\$	111,910.00	\$	341,951.00
	622601H9111		42C227						
					NET CHANGE	\$	111,910.00		

SERVICE <u>NAME</u>	NET CHANGE <u>BY ACRN</u>	<u>ACCOUNTING CLASSIFICATION</u>		ACCOUNTING <u>STATION</u>		INCREASE/DECREASE <u>AMOUNT</u>
Army	AC	21 42040000046N6N7EP622601255Y S20113		W56HZV	\$	111,910.00
					NET CHANGE	\$ 111,910.00

		<u>PRIOR AMOUNT</u> <u>OF AWARD</u>		<u>INCREASE/DECREASE</u> <u>AMOUNT</u>		<u>CUMULATIVE</u> <u>OBLIG AMT</u>
NET CHANGE FOR AWARD:	\$	599,516.00	\$	111,910.00	\$	711,426.00